IMPROVING BALANCE IN BEGINNER SKIERS

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Abstract. *The purpose of this research is to highlight the contribution of our programme to improving balance in beginner skiers included in the experimental group; these improvements develop the participants' ability to learn skiing much faster, more efficiently and more correctly. Implementing a training programme exclusively dedicated to balance improves this skill and leads to better results in the final tests performed at the end of the work period. The participants in this study were 28 subjects divided into two groups, namely an experimental group and a control group. The subjects are first-year students at UNEFS Bucharest, Faculty of Physical Education and Sport. The research methods used in this study are the following: experiment method, test method, mathematical and statistical method, as well as graphical method. The tests used to conduct the research are: Balance on a gym ball with a diameter of 65 cm, Stork Test and Bass Test. Following the application of the differentiated training programme including workouts dedicated to balance, the experimental group recorded significantly better results in terms of balance compared to the scores obtained by the control group. The information collected from the testing of both groups has revealed that, in the case of beginner skiers, exercises for the development of balance help to learn skiing, which answer the research question.*

Keywords: *skiing, balance, beginners.*

Introduction

Balance is a skill in the absence of which human life and evolution over time would not have been possible and that provides man with the opportunity to integrate into the environment. Currently, the study of this aspect of life allows us to observe how the human body intervenes in achieving the functions without which posture or walk as abilities indispensable to life are not possible. Thus, understanding the processes that underlie the formation of balance guides us in developing programmes able to improve daily activities, increase sports performance and largely prevent the risk of injury.

Skiing, which has been used since ancient times as a means of transportation across the vast stretches of snow in the north of the globe, has quickly become one of the most loved winter sports, and nowadays it is seen by many people as an ideal leisure activity that captivates millions of fans of this sport all over the world.

The specificity of skiing, namely sliding on an uneven slope, requires the athlete to have very good balance control in order to adapt to changing situations that may occur at any point of the race. Thus, balance is identified as a fundamental skill in the evolution of elite athletes, becoming a factor that conditions the achievement of high performance. According to Gavojdea (2016), balance is an essential component of almost every motor performance task. Cigrovski et al. (2017) also support this idea and state that balance is a major component of performance in skiing. In contrast, several studies have confirmed that loss of balance is the main cause of skiing injuries (Laskowski et al., 1997).

In sports theory, balance is defined as the neuromotor ability that primarily allows maintaining body posture (static balance), but also as the ability of maintaining and regaining it during a motor activity or after its completion. In biomechanics, balance is regarded as the possibility of maintaining the projection of the centre of gravity within the support base. (Gustyn, 2012)

The literature highlights two terms that at first glance would seem synonymous, namely "stability" and "balance". Stability is the property of the body to regain its balance when a disturbance occurs, thus avoiding falling. Balance is the ability to maintain the centre of gravity within the area delimited by the support base.

The most common forms of balance encountered in both everyday life and sports activity, which are also studied in the present research, are static and dynamic balance.

Static balance is the individual's ability to maintain a position. Posture is achieved in the stationary standing position, which depends on the ability of the musculoskeletal system (that is responsible for balance disturbances) to permanently maintain the projection of the centre of gravity within the support base. Postural tone is the state of contraction of certain muscles without which the standing position and/or the position of some parts of the body cannot be maintained. Body stability at rest is the result of coordinated and permanent contractions of antigravity muscles, which help to maintain the standing position or a body segment. Bipedal position is mainly maintained by the posterior muscle contraction, which prevents the body from falling forward.

Dynamic balance is the result of complex postural and kinetic reflex mechanisms. During movement, the support base varies, in the sense that it decreases or increases due to opposite and compensatory, voluntary and/or involuntary motor acts of the head, torso and limbs.

Alpine skiing imposes high requirements in terms of muscle strength and balance abilities (Ferguson, 2010). In this outdoor winter sport, the movement is generated by external forces (mainly gravity) that act on the athlete's body (Klous et al., 2014). Maintaining a stable position during downhill skiing and changing the direction of movement is achieved by balancing the body, namely by deliberately losing balance in the direction of the intended movement (Staniszewski et al., 2016). The skier's position while moving down the slope can be compared to an inverted pendulum whose point of support is represented by the skis guided on the snow (Nemec et al., 2014).

Another particular aspect of this sport is the sliding support base. The centre of gravity always needs to be imparted a travel speed equal to the sliding speed of the support base so as it can constantly be projected within the support base.

In skiing, balance must be ensured in three directions: anteroposterior, vertical and lateral.

To achieve an improvement in anteroposterior stability during rapid descents, when a heavier or thicker layer of snow is encountered, on an uneven slope or on landing, the skier will have to advance one of the skis to increase the support base. If a brake is to be used, the body must be carried backward so that braking does not unbalance the skier's body forward. If the speed is high on compact or icy snow, the centre of gravity must go close to the ground by the triple flexion at the ankle, knee and hip joints, but also by leaning the body forward and downward concomitantly with increasing the support base, which provides better stability in any circumstance when sliding. A median position facilitates downhill skiing on uneven slopes due to the possibility of the joints to absorb the shock, which is helped by the

systems that are included in the composition of the system achieving the balance function. Shifting the weight from one ski to another is an element specific to balanced-based skiing technique. It is completely unnatural for beginners to distribute weight mainly to the outer ski when performing turns. (Toader, 2017)

In skiing, the efficiency of most movements largely depends on the athlete's ability to keep balance. According to Wojtyczek et al. (2014), balance exercises are the key to maintaining stable positions on skis; the authors add that the level of expertise in alpine skiing correlates with balance and that skiing can improve one's balance abilities.

The level of training influences the skier's basic position on uneven slopes. Gathering information about the ski edges and their contact points allow the athlete not to lose stability and restore the centre of gravity from one ski to another (Čillík & Rázusová, 2014).

Skiing is a sport with predominant eccentric muscle contraction (Berg & Eiken, 1999), which is a specific muscle activity for slowing down in everyday life, for instance, while walking downhill. It is generally accepted that high-level skiers train those abilities that are crucial for success in the specific events of alpine skiing (Cigrovski et al., 2017).

Premise

The premise of this paper is that developing the main motor skills facilitates both the learning process of skiing technique and sports performance, given that coordination abilities have the greatest influence on the acquisition of new skills. Thus, balance, which is included in the repertoire of motor skills, becomes an exponential component in facilitating the learning of new motor skills. Therefore, through this research, we aimed to emphasise the importance of balance in the teaching process.

Purpose

The purpose of this research is to highlight the contribution of our programme to improving balance in beginner skiers included in the experimental group; these improvements develop the participants' ability to learn skiing much faster, more efficiently and more correctly.

Objectives

- Designing a training programme that improves balance in beginner skiers.
- Knowing the percentage contribution of the training programme to balance improvement.

Tasks

- Identifying the target group and verifying the eligibility of subjects
- Performing the initial assessment
- Applying the training programme
- Performing the final assessment

- Analysing the data obtained from assessments
- Drawing the final conclusions

Research question

Learning the skiing techniques is considered difficult by beginners, and this is due to the specific features of this sport. Maintaining dynamic balance while sliding and constant adaptation to various situations, the control of reflex reactions and automatisms, the specific equipment and, last but not least, the control of fear are elements that must necessarily be taken into account by the coach. Thus, can balance development facilitate the teaching process by improving the above-mentioned variables?

Starting from the previous considerations and in accordance with the topic of this paper, we have formulated the following research question - implementing a training programme exclusively dedicated to balance improves this skill and leads to better results in the final tests performed at the end of the work period?

Methodology

Participants

The participants in this study are 28 first-year students at UNEFS Bucharest, Faculty of Physical Education and Sport, who are divided into two groups, namely an experimental group (Table 1) and a control group (Table 2).

Table 1. *Composition of the experiment group*

Item no.	Name initials	Age	Gender
1.	B.R.	19	F
2.	C.S.	20	M
3.	B.E.	18	F
4.	L.F.	21	F
5.	C.G.	19	M
6.	R.G.	19	F
7.	D.G.	20	M
8.	C.E.	20	F
9.	S.R.	20	F
10.	V.T.	20	M
11.	I.A.	20	M
12.	S.A.	20	F
13.	G.F.	22	F
14.	B.I.	19	M

Table 2. *Composition of the control group*

Item no.	Name initials	Age	Gender
1.	P.V.	20	M
2.	C.B.	19	M
3.	R.I.	19	F
4.	P.A.	20	F
5.	R.A.	20	F
6.	H.R.	20	M
7.	T.R.	20	M
8.	M.A.	19	F
9.	S.D.	20	F
10.	I.L.	20	F
11.	M.C.	19	F
12.	S.C.	20	F
13.	N.R.	19	M
14.	B.L.	19	M

Methods

In order to carry out the research activity, we used the following methods:

- Documentation method – consisted in analysing the literature on the chosen topic.
- Experiment method – used to obtain palpable results related to the influence of the training programme on the balance ability of subjects. Dividing the subjects into an experiment group and a control group helped us observe the impact of the programme designed by us, in terms of benefits. Also, data processing and drawing conclusions would have not been possible for this research without using this method.
- Test method – is often used in the field of sports and involves assessing the levels of specific parameters; these levels are assessed by interpreting the data obtained following the application of a system of tests.
- Mathematical and statistical method – used to interpret the research data.
- Graphical method – used to facilitate the understanding of statistical analysis; it is based on a much more harmonious display of data that become easy to understand.

Experiment

The research activity was carried out in Romania, more precisely in the Parâng resort, in Hunedoara county, from 17 February 2020 to 1 March 2020, and involved the participation of 28 subjects divided into two groups, namely an experimental group and a control group.

To obtain the expected results, we performed an initial assessment at the beginning of the period and a final assessment at the end of the work period, which brought us information about the progress recorded by the experiment group subjects compared to the control group subjects following the application of a programme exclusively dedicated to balance development.

During this period, both groups attended the same course of initiation into skiing, which lasted 11 days out of the 12 in which they were present. The course included a training programme with a 4-hour duration, between 9:00 and 13:00. In addition to this programme,

the experiment group performed 4 more separate workouts dedicated to balance in the following days: 19 February 2020, 21 February 2020, 24 February 2020 and 26 February 2020.

Training 19 February 2020

- Front scale (support on elbows and tiptoes) - 3 x 30'
- Side scale to the right (support on right elbow and outer right foot) - 3 x 30'
- Side scale to the left (support on left elbow and outer left foot) - 3 x 30'
- Walking on the narrow side of the bench - 3 x 3 m
- Tiptoe walking on the narrow side of the bench - 3 x 3 m
- Side walking on the narrow side of the bench - 3 x 3 m
- Maintaining balance on a 65-cm gym ball in the kneeling position - 5 x 30'
- Circular leap from the left foot to right the foot and holding position for 5' - 3 x 10 circles
- Maintaining the standing position on one foot - 3 x 30'
- Maintaining position on the rolling board - 3 x 30'

Training 21 February 2020

- Front scale (support on elbows and tiptoes) - 3 x 30'
- Side scale to the right (support on right elbow and outer right foot) - 3 x 30'
- Side scale to the left (support on left elbow and outer left foot) - 3 x 30'
- Walking on the narrow side of the bench - 3 x 3 m
- Walking on the narrow side of the bench with 360^0 twist - 3 x 3 m
- Tiptoe walking on the narrow side of the bench - 3 x 3 m
- Tiptoe walking on the narrow side of the bench with 360^0 twist - 3 x 3 m
- Maintaining balance on a 65-cm gym ball in the kneeling position while rolling the medicine ball around the torso - 5 x 30'
- Circular leap from the left foot to right the foot and holding position for 5' - 3 x 10 circles
- Maintaining the one-legged tiptoe position - 3 x 30'
- Maintaining squat position on the rolling board - 3 x 30'
- Maintaining position on the rolling board with hands on the pelvis - 3 x 30'

Training 24 February 2020

- Front scale (support on elbows and tiptoes) - 3 x 45'
- Side scale to the right (support on right elbow and outer right foot) - 3 x 45'
- Side scale to the left (support on left elbow and outer left foot) - 3 x 45'
- Walking on the narrow side of the bench with 360^0 twist - 3 x 3 m
- Tiptoe walking on the narrow side of the bench with 360^0 twist - 3 x 3 m
- Bench jump-over from the left foot to right the foot and holding position for 5' - 3 x 30'
- Maintaining the one-legged tiptoe position on the narrow side of the bench - 6 x 30'
- Maintaining the one-legged tiptoe position on the narrow side of the bench with slight flexion at the knee joint - 4 x 15'
- Maintaining balance on a 65-cm gym ball in the standing position - 3 x 15'

- Maintaining squat position on the rolling board with hands on the pelvis - 3 x 30'
- Maintaining position on the rolling board while juggling a ball - 3 x 30'
- Rope balance - 3 x 10'

Training 26 February 2020

- Front scale (support on elbows and tiptoes) - 3 x 45'
- Side scale to the right (support on right elbow and outer right foot) - 3 x 45'
- Side scale to the left (support on left elbow and outer left foot) - 3 x 45'
- Bench jump-over from the left foot to right the foot and holding position for 5' - 3 x 30'
- Maintaining the one-legged tiptoe position on the narrow side of the bench and moving the free leg away - 6 x 30'
- Maintaining the one-legged tiptoe position on the narrow side of the bench with slight flexion at the knee joint and moving the free leg away - 4 x 15'
- Maintaining balance on a 65-cm gym ball in the standing position - 3 x 20'
- Maintaining squat position on the rolling board with hands behind the back - 3 x 30'
- Maintaining position on the rolling board while juggling a ball - 3 x 30'
- Maintaining position on the rolling board while passing a ball from the right hand to the left hand and conversely - 3 x 30'
- Rope balance - 3 x 20'
- Rope walking - 3 x 3m

Tests used in the research

To collect data about the level of balance showed by subjects before implementing the programme, but also about their progress upon programme completion, we used three tests: Balance on a gym ball with a diameter of 65 cm, Stork Test and Bass Test.

- Balance on a gym ball with a diameter of 65 cm
- Used to assess the subject's ability to keep balance on an unstable surface
- Materials: Gym ball with a diameter of 65 cm, stopwatch
- Description: The subject is helped to stand up on the gym ball, and when he or she has no other support except for the ball, the stopwatch starts and will record the time that the subject spends on the ball. Time stops when the subject touches the floor with any part of the body or touches the ball with other part of the body except for the feet.
- Stork Test
- Used to assess the subject's ability to keep balance in a static position
- Materials: Stopwatch
- Description: The subject stays on one foot, with the sole of the opposite foot on the knee of the limb on which it is leaning. At the "start" command, the subject rises on the tiptoe of the support leg and will hold the position for as long as possible. Time stops when the subject touches the floor with the heel or when the sole of the free leg separates from the inner side of the knee of the opposite leg.
- Bass Test
- Used to assess the subject's ability to keep balance in dynamic situations

- Materials: 10 spots of adhesive tape with the size 2.54/2 cm, stopwatch, measuring tape
- Description: The subject stands with the right foot on the starting spot, then leaps on the first spot with the left foot and tries to hold the position for 5 seconds. The subject will continue to alternate legs while leaping and will hold the static position for 5 seconds and so on, until completing the route. The ball of the foot must completely cover the spot so that it cannot be seen, but the heel must not touch the floor. Five points are awarded for each correct landing and covering of the spot, and 1 point is awarded for each second of maintaining static balance. A subject can obtain 10 points at the most for each spot or a total of 100 points for the entire route.

Results

Test values were recorded, interpreted, and then a comparison was made between the two groups.

Table 3. *Results for Balance on a gym ball with a diameter of 65 cm – Experiment group*

Item no.	Name initials	Initial test (min)	Final test (min)
1	B.R.	0.47	0.55
2	C.S.	0.36	0.46
3	B.E.	0.15	1.04
4	L.F.	0.21	0.41
5	C.G.	0.45	1.06
6	R.G.	0.05	0.48
7	D.G.	0.46	0.58
8	C.E.	0.05	0.66
9	S.R.	0.08	0.35
10	V.T.	0.34	1.12
11	I.A.	0.43	0.57
12	S.A.	0.47	0.55
13	G.F.	0.21	0.56
14	B.I.	0.52	1.24

Table 4. *Comparative analysis of statistical indicators calculated for Balance on a gym ball with a diameter of 65 cm, initial and final assessments – Experiment group*

Test	Mean	Mean difference (F-I)	Median	Standard deviation	Minimum	Maximum	Range of motion
Initial	0.30		0.35	0.17	0.05	0.52	0.47
Final	0.68	0.38	0.56	0.29	0.35	1.24	0.89

Following the test of Balance on a gym ball with a diameter of 65 cm, the experiment group (Tables 3 and 4) increased its average time in the final test by 0.38 min, from 0.30 to 0.68. The median recorded an increase of 0.21. Times vary between 0.05 and 0.52 in the initial test, and between 0.35 and 1.24 in the final test. Range of motion increased by 0.42. Mean difference between the two assessments is shown in Figure 1.

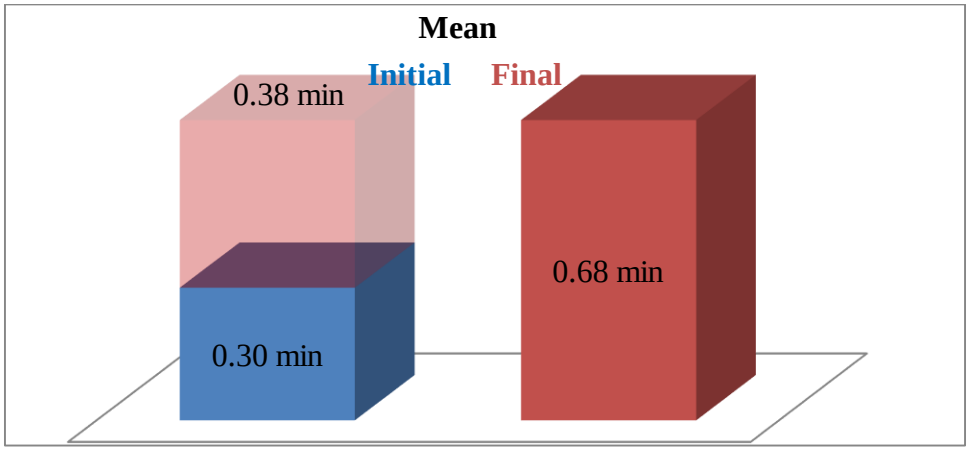

Figure 1. Arithmetic mean values for Balance on a gym ball with a diameter of 65 cm – Experiment group

Table 5. *Results for Balance on a gym ball with a diameter of 65 cm – Control group*

Item no.	Name initials	Initial test (min)	Final test (min)
1	P.V.	0.07	0.51
2	C.B.	0.10	0.33
3	R.I.	0.35	0.57
4	P.A.	0.46	0.59
5	R.A.	0.40	0.46
6	H.R.	0.22	0.45
7	T.R.	0.45	0.56
8	M.A.	0.34	0.49
9	S.D.	0.27	0.35
10	I.L.	0.16	0.50
11	M.C.	0.22	0.41
12	S.C.	0.28	0.39
13	N.R.	0.05	0.31
14	B.L.	0.26	0.38

Table 6. *Comparative analysis of statistical indicators calculated for Balance on a gym ball with a diameter of 65 cm, initial and final assessments – Control group*

Test	Mean	Mean difference (F-I)	Median	Standard deviation	Minimum	Maximum	Range of motion
Initial	0.25		0.26	0.13	0.05	0.46	0.41
Final	0.45	0.20	0.45	0.09	0.31	0.59	0.28

Following the test of Balance on a gym ball with a diameter of 65 cm, the control group (Tables 5 and 6) increased its average time in the final test by 0.20 min, from 0.25 to 0.45. The median recorded an increase of 0.19. Times vary between 0.05 and 0.46 in the initial test, and between 0.31 and 0.59 in the final test. Range of motion decreased by 0.13. Mean difference between the two assessments is shown in Figure 2.

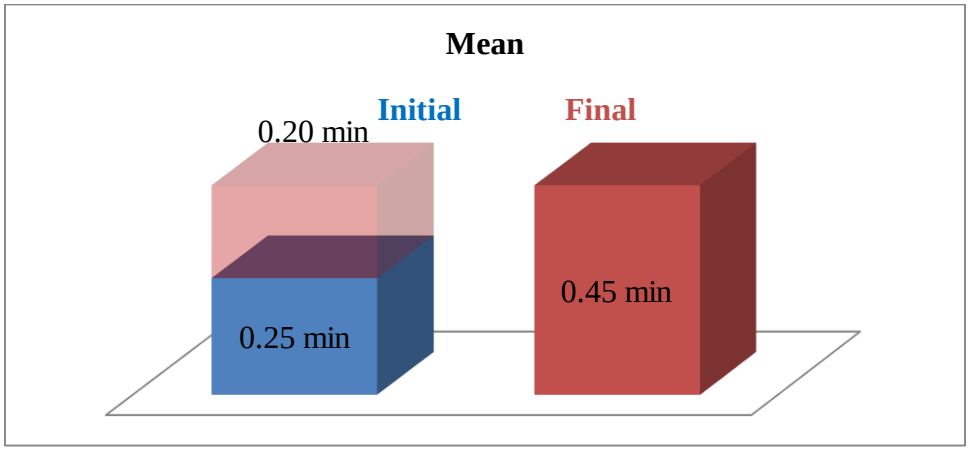

Figure 2. Arithmetic mean value for Balance on a gym ball with a diameter of 65 cm – Control group

Table 7. *Results for Stork Test – Experiment group*

Item no.	Name initials	Initial test (min)	Final test (min)
1	B.R.	0.05	0.24
2	C.S.	0.11	0.34
3	B.E.	0.14	0.31
4	L.F.	0.22	0.28
5	C.G.	0.05	0.21
6	R.G.	0.04	0.19
7	D.G.	0.09	0.32
8	C.E.	0.21	0.29
9	S.R.	0.14	0.31
10	V.T.	0.15	0.27
11	I.A.	0.08	0.22
12	S.A.	0.12	0.28
13	G.F.	0.03	0.14
14	B.I.	0.15	0.33

Table 8. *Comparative analysis of statistical indicators calculated for Stork Test, initial and final assessments – Experiment group*

Test	Mean	Mean difference (F-I)	Median	Standard deviation	Minimum	Maximum	Range of motion
Initial	0.11		0.11	0.06	0.03	0.22	0.19
Final	0.26	0.15	0.28	0.05	0.14	0.34	0.20

Following the Stork Test, the experiment group (Tables 7 and 8) increased its average time in the final test by 0.15 min, from 0.11 to 0.26. The median recorded an increase of 0.17. Times vary between 0.03 and 0.22 in the initial test, and between 0.14 and 0.34 in the final test. Range of motion increased by 0.01. Mean difference between the two assessments is shown in Figure 3.

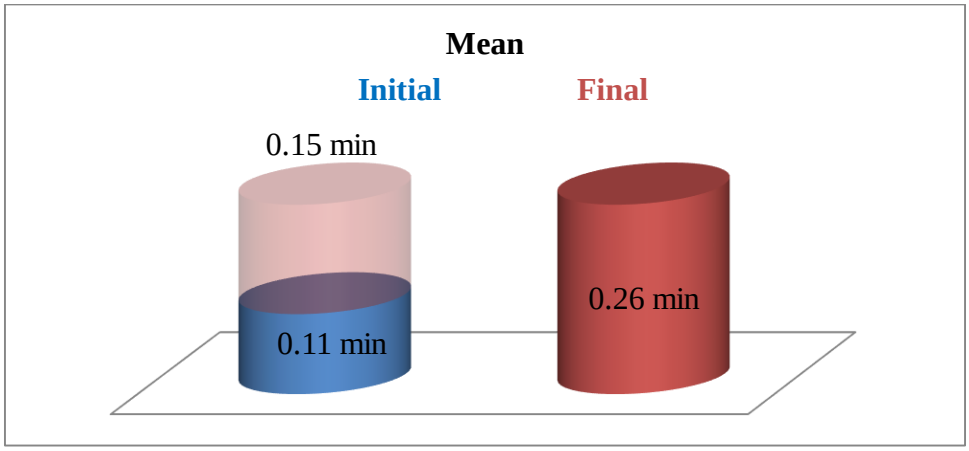

Figure 3. Arithmetic mean values for Stork Test – Experiment group

Table 9. *Results for Stork Test – Control group*

Item no.	Name initials	Initial test (min)	Final test (min)
1	P.V.	0.08	0.17
2	C.B.	0.12	0.21
3	R.I.	0.08	0.2
4	P.A.	0.11	0.22
5	R.A.	0.14	0.19
6	H.R.	0.08	0.17
7	T.R.	0.18	0.28
8	M.A.	0.17	0.28
9	S.D.	0.12	0.19
10	I.L.	0.16	0.24
11	M.C.	0.08	0.19
12	S.C.	0.13	0.21
13	N.R.	0.17	0.3
14	B.L.	0.16	0.23

Table 10. *Comparative analysis of statistical indicators calculated for Stork Test, initial and final assessments – Control group*

Test	Mean	Mean difference (F-I)	Median	Standard deviation	Minimum	Maximum	Range of motion
Initial	0.12		0.12	0.03	0.08	0.18	0.10
Final	0.22	0.10	0.21	0.04	0.17	0.30	0.13

Following the Stork Test, the control group (Tables 9 and 10) increased its average time in the final test by 0.10 min, from 0.12 to 0.22. The median recorded an increase of 0.09. Times vary between 0.08 and 0.18 in the initial test, and between 0.17 and 0.30 in the final test. Range of motion increased by 0.03. Mean difference between the two assessments is shown in Figure 4.

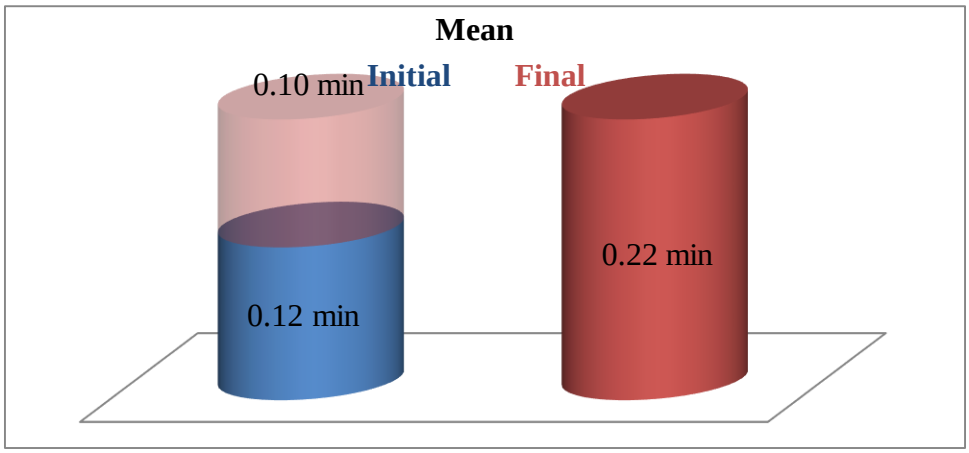

Figure 4. Arithmetic mean values for Stork Test – Control group

Table 11. *Results for Bass Test – Experiment group*

Item no.	Name initials	Initial test (pts)	Final test (pts)
1	B.R.	32	53
2	C.S.	47	64
3	B.E.	45	60
4	L.F.	50	68
5	C.G.	51	76
6	R.G.	43	54
7	D.G.	41	53
8	C.E.	46	61
9	S.R.	42	54
10	V.T.	51	68
11	I.A.	49	60
12	S.A.	39	52
13	G.F.	46	56
14	B.I.	42	55

Table 12. *Comparative analysis of statistical indicators calculated for Bass Test, initial and final assessments – Experiment group*

Test	Mean	Mean difference (F-I)	Median	Standard deviation	Minimum	Maximum	Range of motion
Initial	44.57		45.5	5.25	32	51	19
Final	59.57	15	58	7.19	52	76	24

Following the Bass Test, the experiment group (Tables 11 and 12) increased its average time in the final test by 15 points, from 44.57 to 59.57. The median recorded an increase of 0.17. Points vary between 32 and 51 in the initial test, and between 52 and 76 in the final test. Range of motion increased by 5 points. Mean difference between the two assessments is shown in Figure 5.

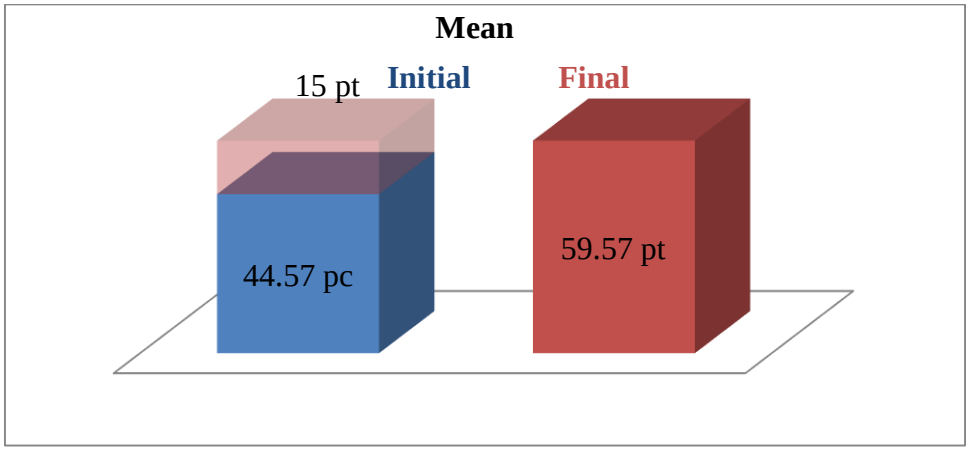

Figure 5. Arithmetic mean values for Bass Test – Experiment group

Table 13. *Results for Bass Test – Control group*

Item no.	Name initials	Initial test (pts)	Final test (pts)
1	P.V.	37	46
2	C.B.	39	50
3	R.I.	46	53
4	P.A.	44	60
5	R.A.	42	51
6	H.R.	39	46
7	T.R.	40	53
8	M.A.	49	66
9	S.D.	43	52
10	I.L.	43	57
11	M.C.	38	45
12	S.C.	41	50
13	N.R.	45	53
14	B.L.	50	62

Table 14. *Comparative analysis of statistical indicators calculated for Bass Test, initial and final assessments – Control group*

Test	Mean	Mean difference (F-I)	Median	Standard deviation	Minimum	Maximum	Range of motion
Initial	42.57		42.5	3.95	37	50	13
Final	53.14	10.57	52.5	6.19	45	66	21

Following the Bass Test, the control group (Tables 13 and 14) increased its average time in the final test by 10.57 points, from 42.57 to 53.14. The median recorded an increase of 10 points. Points vary between 37 and 50 in the initial test, and between 45 and 66 in the final test. Range of motion increased by 8 points. Mean difference between the two assessments is shown in Figure 6.

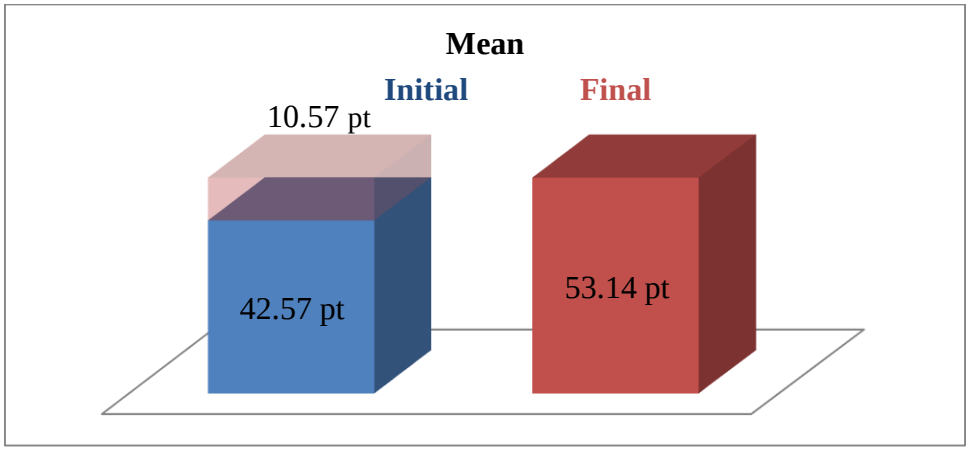

Figure 6. Arithmetic mean values for Bass Test – Control group

Conclusion

The study of the literature provided valuable information on the formation of balance and its complexity. From analysers to volitional or reflex actions, information travels a long way across the entire nervous system where it is analysed at all levels in order to formulate the responses needed to maintain balance. Maintaining posture and the ability to regain it in moments of imbalance preserve the autonomy of a person.

Following the application of the differentiated training programme including workouts dedicated to balance, the experimental group recorded significantly better results in terms of balance compared to the scores obtained by the control group. The information collected from the testing of both groups has revealed that, in the case of beginner skiers, exercises for balance development help to learn skiing, which answer our research question.

Thus, applying the test of Balance on a gym ball with a diameter of 65 cm has confirmed that, following the specific training, stability on an unstable surface is improved by almost 18 seconds compared to the time achieved by the control group. In Stork Test, as a result of the specific training applied, an average increase of 5 seconds was recorded by the experiment group compared to the control group. In Bass Test, the experiment group subjects gathered 4.43 more points than the control group subjects.

Following the research carried out, our recommendation for the training process aimed at beginner skiers is to apply specific workouts dedicated to balance development in order to facilitate quick and correct initiation into skiing.

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